Roof Coatings Manufacturers Association
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August 16, 2006

Rebecca Duff
ICF International
9300 Lee Highway
Fairfax, VA 22301

Re: ENERGY STAR Version 2.0 Final Draft

Dear Ms. Duff:

The Roof Coatings Manufacturers Association (RCMA) is the North American trade association representing the producers of bituminous and non-bituminous (acrylic and elastomeric) roof coatings and cements which are applied in new and resurfacing roofing systems and are also used as repair and maintenance products. We appreciate the opportunity to provide comments on the ENERGY STAR 2.0 Final Draft.

We have carefully reviewed this Final Draft and will limit our comments on same to the Specifications for Low-Slope Roof Products because we believe, and are submitting documents, which support our belief, that if one particular aspect of this section is not changed it will adversely affect the desired results of lowering energy consumption and cost. In addition, failing to make the change we suggest will place an unnecessary and harsh financial burden on property owners without giving them the choice to decide whether or not they want to assume that burden.

Specifically, RCMA supports the addition of Thermal Emittance to the Performance Specification in Table 1 of Version 2.0 at a level of Greater than or equal to 0.40 and the removal of the SRI Alternative.

Failure to make the suggested change would result in the effective removal of a highly reflective and energy saving class of products, aluminum-pigmented roof coatings, which for decades before ENERGY STAR have served the public and the environment well by reducing under roof temperatures during the cooling season and have extended the service life of the surfaces they were applied to – and done it then, and do it now, at reasonable cost.

As you can see from the charts that accompany this letter aluminum-pigmented roof coatings offer greater energy savings in a significant portion of the country. It should confound any reasonable person why these coatings should be excluded from use in those areas where they afford greater energy savings – and, even in those areas where the savings may not be as great as other coatings or systems

We have suggested, on more than one occasion, that ENERGY STAR recognize the fact that climate conditions in different geographic areas should permit different standards be established in those areas for roofing products. So far ENERGY STAR has refused to do so. This defies both logic and ENERGY STAR's own precedents.

When one goes to the ENERGY STAR website it shows a heading, Home Envelope. Under that heading there are three categories of products:

- Home Sealing (Insulation and Air Sealing)
- Windows, Doors & Skylights
- Roof Products

In the first listing ENERGY STAR shows "Recommended Levels of Insulation". In the opening paragraph there is a sentence beginning, "The table below shows what levels of insulation are cost-effective for different climates and locations in the home." The table shows three different climate categories, some of which are even narrowed down to sections of specific states.

In the second listing for residential window, doors and skylights the criteria is "tailored to four Climate Zones". And, the opening paragraph reads, "A product's energy efficiency for a given climate is based on its impact on heat gain and loss in cold weather and heat gain in warm weather. Windows that are energy efficient in Florida will not necessarily be energy efficient in Michigan and vice-versa."

In effect what RCMA is saying is, "roof coatings that are energy efficient in Florida will not necessarily be energy efficient in Michigan and vice-versa". That is precisely what we want ENERGY STAR to recognize in Roof Products and that will precisely be the positive result if you accept our recommended change.

There are other examples of ENERGY STAR rated products that permit and define ranges of "Percent Better" statements. (See refrigerators, freezers, and clothes washers.) On Page 8 of the FINAL DRAFT you are prepared to denote in some manner that there is a difference between tests done on cleaned and un-cleaned. To distinguish between those products offering only 0.40 thermal emittance and those that are offered at 0.75

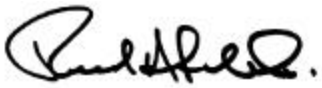
minimum ENERGY STAR might want to consider including in its FINAL DRAFT a statement to the effect:

> ENERGY STAR qualifying products having just the minimum emittance level of 0.40 are unlikely to produce the same energy savings as those products meeting a higher level of thermal emittance of 0.75 in those areas where both ambient temperatures and sunlight are at high levels.

As always, RCMA is prepared to discuss with your office its position on the subject matter raised above. We believe it would serve the public's interest quite well if some of your staff were to meet with a small group of RCMA representatives to see if we can't resolve any of your concerns with our position.

Your kind consideration of our position is appreciated. Please do not hesitate to call me at 202-207-1110 or e-mail me at rhitchcock@kellencompany.com with your comments or your acceptance of our suggestion for a meeting.

Sincerely,



Reed B. Hitchcock
Executive Director
Roof Coatings Manufacturers Association

Enclosure

cc: Steven Ryan, EPA
Brock Landry, RCMA General Counsel
RCMA Government Affairs Committee

KARNAK CORPORATION

THE SEAL OF QUALITY

Buildings where the source of energy is

ELECTRICITY

4 "Cold Region" States and 4 "Hot Region" States Comparison

COLD REGIONS (Heat Dominated)		Building with NO PEAK Energy Charges HIGHEST ENERGY SAVINGS per Sq. Ft. of Roof is achieved with:		Building WITH PEAK Energy Charges HIGHEST ENERGY SAVINGS per Sq. Ft. of Roof is achieved with:
Chicago		Aluminum Savings = $0.004 (White incurs a **PENALTY** of -$0.072)		Aluminum Savings = $0.072 (White incurs a **PENALTY** of -$0.006)
Minneapolis, MN		Aluminum Savings = $0.029 (White incurs a **PENALTY** of -$0.095)		Aluminum = $0.061 Savings (White incurs a **PENALTY** of -$0.028)
New York, NY		Aluminum Savings = $0.058 (White incurs a **PENALTY** of -$0.038)		Aluminum = $0.090 Savings (White saves $0.029)
Seattle, WA		Aluminum Savings = $0.029 (White incurs a **PENALTY** of -$0.102)		Aluminum = $0.060 Savings (White incurs a **PENALTY** of -$0.040)

NOTE 1: Aluminum saves energy and money in ALL of these regions for buildings where source of energy is Electric
NOTE 2: Coating roofs white in these regions incurs substantial PENALTIES, meaning they increase energy consumption

HOT REGIONS (Cooling Dominated)		Building with NO PEAK Energy Charges HIGHEST ENERGY SAVINGS per Sq. Ft. of Roof is achieved with:		Building WITH PEAK Energy Charges HIGHEST ENERGY SAVINGS per Sq. Ft. of Roof is achieved with:
Los Angeles, CA		Aluminum Savings = $0.045 (White savings = $0.013)		White = $0.087 Savings (Aluminum savings = $0.080)
Miami, FL		White = $0.183 Savings (Aluminum savings = $0.090)		White = $0.257 Savings (Aluminum savings = $0.124)
Phoenix, AZ		White = $0.180 Savings (Aluminum savings = $0.113)		White = $0.261 Savings (Aluminum savings = $0.149)
Atlanta, GA		Aluminum Savings = $0.087 (White savings = $0.033)		Aluminum Savings = $0.121 (White savings = $0.104)

NOTE 3: Even in "Cooling Dominated Climates" Aluminum is the ideal Energy Savings Vehicle in 3 of the 8 possibilities above
NOTE 4: Aluminum Coatings do NOT incur any penalties in any of these regions. Meaning they always save energy.
NOTE 5: in 11 out of the 16 roof configurations above, Aluminum performs better than white and would be eliminated if 0.75 emissivity was adopted.

See Second Tab on Bottom for Total Data based on Fuel, Etc.

Chart of Choices

Calculator #1 (For roofs with NO PEAK Charges -> http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm
Calculator #2 (For roofs WITH PEAK Charges -> http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcPeak.htm

CITIES	Inulat. R Value	Coating Color	Refl.	Emmis.	Summer Cost of Electr. ($/KWh)	A.C. Efficiency	Fuel Type	Heat Electric ($/KWh)	Heat Gas	Heat Fuel	Heat Sys. Efficiency	Peak Charges	Electr Peak Demand Charges	Electr Peak Duration (Months)	* Savings $ Per Sq. Ft. Per Year	Cooling Savings or Penalty $ per Sq. Ft.	Heating Savings or Penalty $ per Sq. Ft.		* Savings $ Per sq. ft. per Yr. Adjusted for 3 year refl.
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Los Angeles, CA	10	White	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.042	$0.051	($0.009)		$0.030
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.028	$0.022	$0.006		$0.019
Los Angeles, CA	10	Black	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Los Angeles, CA	10	White	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.013	$0.051	($0.038)		$0.009
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.045	$0.022	$0.023		$0.043
Los Angeles, CA	10	Black	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Los Angeles, CA	10	White	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.040	$0.051	($0.011)		$0.029
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.029	$0.022	$0.007		$0.021
Los Angeles, CA	10	Black	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
FACILITIES WITH PEAK CHARGE PENALTIES																		CSDS	
Los Angeles, CA	10	White	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.116	$0.051	($0.009)	$0.074	$0.085
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.062	$0.022	$0.006	$0.035	$0.038
Los Angeles, CA	10	Black	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Los Angeles, CA	10	White	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.087	$0.051	($0.038)	$0.074	$0.064
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.080	$0.022	$0.023	$0.035	$0.062
Los Angeles, CA	10	Black	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Los Angeles, CA	10	White	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.114	$0.051	($0.011)	$0.074	$0.084
Los Angeles, CA	10	Aluminum	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.064	$0.022	$0.007	$0.035	$0.040
Los Angeles, CA	10	Black	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Chicago, IL	10	White	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.029	$0.061	($0.032)		$0.022
Chicago, IL	10	Aluminum	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.030	$0.027	$0.003		$0.024
Chicago, IL	10	Black	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Chicago, IL	10	White	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	($0.072)	$0.061	($0.133)		($0.050)
Chicago, IL	10	Aluminum	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.040	$0.027	$0.013		$0.055
Chicago, IL	10	Black	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Chicago, IL	10	White	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.023	$0.061	($0.039)		$0.017
Chicago, IL	10	Aluminum	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.031	$0.027	$0.004		$0.026
Chicago, IL	10	Black	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
FACILITIES WITH PEAK CHARGE PENALTIES																		CSDS	
Chicago, IL	10	White	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.096	$0.061	($0.032)	$0.066	$0.071
Chicago, IL	10	Aluminum	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.062	$0.027	$0.003	$0.032	$0.043
Chicago, IL	10	Black	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Chicago, IL	10	White	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.006)	$0.061	($0.133)	$0.066	($0.001)
Chicago, IL	10	Aluminum	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.072	$0.027	$0.013	$0.032	$0.074

Chicago, IL	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Chicago, IL	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.081	$0.061	($0.039)	($0.066)	$0.066
Chicago, IL	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.063	$0.027	$0.004	$0.032	$0.045
Chicago, IL	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Miami, FL	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.187	$0.188	($0.001)		$0.136
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.087	$0.087	$0.001		$0.050
Miami, FL	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Miami, FL	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.183	$0.188	($0.004)		$0.134
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.090	$0.087	$0.003		$0.053
Miami, FL	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Miami, FL	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.186	$0.188	($0.001)		$0.136
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.087	$0.087	$0.001		$0.050
Miami, FL	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
Miami, FL	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.260	$0.188	($0.001)	$0.074	$0.191
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.122	$0.087	$0.001	$0.035	$0.069
Miami, FL	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Miami, FL	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.257	$0.188	($0.004)	$0.074	$0.188
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.124	$0.087	$0.003	$0.035	$0.072
Miami, FL	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Miami, FL	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.260	$0.188	($0.001)	$0.074	$0.190
Miami, FL	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.122	$0.087	$0.001	$0.035	$0.069
Miami, FL	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Minneapolis	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.019	$0.054	($0.036)		$0.014
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.025	$0.023	$0.001		$0.021
Minneapolis	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Minneapolis	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	($0.095)	$0.054	($0.149)		($0.066)
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.029	$0.023	$0.005		$0.049
Minneapolis	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Minneapolis	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.011	$0.054	($0.043)		$0.009
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.025	$0.023	$0.002		$0.023
Minneapolis	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
Minneapolis	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.085	$0.054	($0.036)	$0.067	$0.063
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.057	$0.023	$0.001	$0.033	$0.040
Minneapolis	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Minneapolis	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.028)	$0.054	($0.149)	$0.067	($0.017)
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.061	$0.023	$0.005	$0.033	$0.067
Minneapolis	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Minneapolis	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.077	$0.054	($0.043)	$0.067	$0.058
Minneapolis	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.058	$0.023	$0.002	$0.033	$0.042
Minneapolis	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)

FACILITIES WITH NO PEAK CHARGE PENALTIES																		
New York, NY	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.050	$0.077	($0.028)		$0.036
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.040	$0.035	$0.006		$0.030
New York, NY	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
New York, NY	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	($0.038)	$0.077	($0.116)		($0.026)
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.058	$0.035	$0.023		$0.066
New York, NY	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
New York, NY	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.044	$0.077	($0.034)		$0.032
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.041	$0.035	$0.007		$0.033
New York, NY	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
New York, NY	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.117	$0.077	($0.028)	$0.067	$0.086
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.073	$0.035	$0.006	$0.033	$0.049
New York, NY	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	$0.000
New York, NY	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.029	$0.077	($0.116)	$0.067	$0.023
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.090	$0.035	$0.023	$0.033	$0.085
New York, NY	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	$0.000
New York, NY	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.111	$0.077	($0.034)	$0.067	$0.082
New York, NY	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.074	$0.035	$0.007	$0.033	$0.051
New York, NY	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	$0.000
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Seattle, WA	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	($0.160)	$0.011	($0.027)		($0.011)
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.010	$0.004	$0.006		$0.014
Seattle, WA	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Seattle, WA	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	($0.102)	$0.011	($0.112)		($0.072)
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.029	$0.040	$0.025		$0.050
Seattle, WA	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Seattle, WA	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	($0.011)	$0.022	($0.033)		($0.016)
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.012	$0.004	$0.007		$0.016
Seattle, WA	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
Seattle, WA	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.046	$0.011	($0.027)	$0.062	$0.035
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.042	$0.004	$0.006	$0.031	$0.032
Seattle, WA	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Seattle, WA	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.040)	$0.011	($0.112)	$0.062	($0.026)
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.060	$0.004	$0.025	$0.031	$0.069
Seattle, WA	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Seattle, WA	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.040	$0.011	($0.033)	$0.062	$0.030
Seattle, WA	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.043	$0.004	$0.007	$0.031	$0.035
Seattle, WA	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Atlanta, GA	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.094	$0.113	($0.019)		$0.068
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.062	$0.054	$0.008		$0.043

Atlanta, GA	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Atlanta, GA	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.033	$0.113	($0.081)		$0.024
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.087	$0.054	$0.032		$0.080
Atlanta, GA	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Atlanta, GA	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.090	$0.113	($0.023)		$0.065
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.064	$0.054	$0.009		$0.046
Atlanta, GA	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
Atlanta, GA	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.166	$0.113	($0.019)	$0.072	$0.121
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.096	$0.054	$0.008	$0.034	$0.062
Atlanta, GA	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Atlanta, GA	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.104	$0.113	($0.081)	$0.072	$0.077
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.121	$0.054	$0.032	$0.034	$0.100
Atlanta, GA	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Atlanta, GA	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.162	$0.113	($0.023)	$0.072	$0.118
Atlanta, GA	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.098	$0.054	$0.009	$0.034	$0.065
Atlanta, GA	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
FACILITIES WITH NO PEAK CHARGE PENALTIES																			
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.216	$0.214	($0.008)		$0.151
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.096	$0.091	$0.005		$0.055
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.180	$0.214	($0.034)		$0.132
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.113	$0.091	$0.022		$0.077
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.204	$0.214	($0.010)		$0.149
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.097	$0.091	$0.006		$0.056
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	No	N/A	N/A	$0.000	$0.000	$0.000		$0.000
																		CSDS	
FACILITIES WITH PEAK CHARGE PENALTIES																			
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.287	$0.214	($0.008)	$0.081	$0.210
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	$0.133	$0.091	$0.005	$0.036	$0.075
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Gas	N/A	0.70	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.040)
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.261	$0.214	($0.034)	$0.081	$0.191
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	$0.149	$0.091	$0.022	$0.036	$0.096
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Electric	0.10	N/A	N/A	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)
Phoenix, AZ	10	**White**	80	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.285	$0.214	($0.010)	$0.081	$0.209
Phoenix, AZ	10	**Aluminum**	60	40	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	$0.134	$0.091	$0.006	$0.036	$0.076
Phoenix, AZ	10	**Black**	5	90	0.10	2.0	Fuel Oil	N/A	N/A	0.85	0.7	YES	10	6	($0.004)	$0.000	$0.000	($0.004)	($0.004)

LEGEND		
*	=	*** Savings relative to a "black" roof**
CSDS	=	**Cooling Season Demand Savings**

NOTE: Add to Letter a note that with the "Aged" reflectance coming into the picture. Plugging in the values could yield some really interesting facts

Uses 60% aged reflectance for white with Emmmmittance of 90%

Uses 45% reflectance for Alum. With 40% Emmitance